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IV.—*Survey of the Southern part of the Middle Island of New Zealand.* By Capt. J. LORT STOKES, R.N., F.R.G.S. Communicated by the Admiralty. With Memoranda on its exploration.

[Read February 20, 1851.]

H.M.S. "Acheron," Wellington, Sept. 1, 1850.

SIR,—In compliance with your Excellency's, request I have the honour to forward a brief description of the Southern portion of this province, resulting from the "Acheron's" recent cruise.

In our examination of the seaboard from Otago to Preservation Harbour, a distance of 220 miles, there were found only 4 roadsteads and 1 port; and of the 23 rivers in this extent of coast line, 4 only are available for small vessels, and only 2, the Waikawa and Orete or New River, for ships of from 300 to 400 tons. The latter is of very considerable importance, since it leads to the fertile district hereinafter described, and is separated by merely a half-mile portage from the head waters of the Bluff Harbour, the last in the Middle Island, and having an available block of land within the eastern entrance of Foveaux Strait, and distant 130 miles from Otago.

Our first view of this prairie land of the Middle Island was from the Bluff, a basaltic hill of 855 feet elevation. Between the points of N.E. and N.W. appeared a large plain, of which the outline suggested the idea of a bishop's mitre, and measuring, as was subsequently ascertained, full 100 miles. Isolated patches of woodland were agreeably dotted over its surface, and a range of rugged, snow-clad mountains, the highest distant 80 miles—being 6700 feet, to which I gave your Excellency's name, terminated in that direction the prospect of this extensive landscape. Turning in an opposite direction, the eye rested on Foveaux Strait, then wearing the aspect of a tranquil arm of the sea, some 15 miles in width, with Stewart Island for its southern boundary, and numerous groups of islets occupying the space between shore and shore. Three openings in the northern hills show the course of the Aparima, or Jacob River, winding along the western edge of the plain, that of the New River traversing its central part, with the Mataura running on its eastern side.

The New River was ascended in a whale-boat for nearly 30 miles in a N. $\frac{1}{2}$ E. general direction. In that distance the land rose gradually 200 feet, by 3 steps, each change of elevation being attended by corresponding and somewhat dangerous rapids. The depth of water varies from 2 to 8 feet, the width from 50 to 500 yards. The soil on either bank consists of a rich mould, and appeared clothed with trees or verdant pasture, as the stream

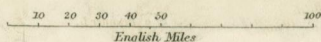
THE MIDDLE ISLAND

(New Zealand)

to illustrate

Papers by Capt.^l Stokes R.N. & Capt.^l Mitchell 84th Reg^t

1851.



Capt. Mitchell's route is coloured Red



THE
MIDDLE ISLAND

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to illustrate

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1851.

20 20 30 40 50 100
English Miles

Capt. Mitchell's route is coloured Red

wound through clumps of wood or swept across the open plain. The Maitava and Jacob River were partially examined by Mr. Hamilton and Mr. Spencer of the "Acheron" whilst she was occupied on the shores of Stewart Island. They explored the intermediate country, and reached Otago in 16 days, each carrying 30 lbs. weight of baggage, which from unexpected accidents was frequently increased to 70 lbs., they being the first Europeans who had accomplished that journey. I extract the following passage from Mr. Hamilton's report :—

"The country westward of the Molyneux or Clutha, as far as Jacob River, offers peculiar advantages for the formation of an extensive settlement. The plain stretching eastward of the latter stream for a distance of 40 miles, comprises at least 600,000 acres of rich soil, clothed with fine grass. The timber is everywhere very equally distributed, and the district, taken altogether, seems to vie in natural advantages with the best parts of the Middle Island.

"Eastward again of this plain, a chain of densely wooded hills extend as far as Molyneux district, having towards the sea an elevation of about 2000 feet. Inland, however, they gradually decrease in height, and the masses of forest disappear altogether, giving place to the finest *pasturage*. This tract, broadest towards the S., where it meets the sea coast, has an area of from 700,000 to 800,000 acres of fertile land. The disappearance of the timber, and consequent scarcity of fuel, will prevent its subdivision into many small stations, or sheep runs. There are indeed some indications of peat or turf in this neighbourhood, which might be available as a substitute, since some patches were seen in a valley little more than half way between Tuturau and the Maitava River. At Tuturau the soil has proved extremely rich, and some potatoes raised by a solitary Maori family, resident there, exceed in volume those brought by Bishop Selwyn from the Chatham Isles (9 inches each way), which were considered as the most remarkable specimens of this root grown in the southern hemisphere."

Speaking generally, the climate is very equal, although rather wet towards the sea coast, but less so in the interior, as is shown by the remarkable difference in the vegetation of these respective situations, and by Mr. Hamilton's experience of only 16 rainy days out of 46, whilst in the ship, out of 77 days, 35 were wet. Snow rarely lies upon the low lands, though we saw very thin ice occasionally between the 15th of March and 1st of June. During this interval the temperature ranged from 40° to 60°, but on one or two occasions as low as 32°, and the wind veered from N.W. to S.W.

The proximity of this extent of fertile land to the Otago Block, with which in fact it is almost connected, suggests the propriety of closing with the natives in their present disposition to sell all that remains to them of the Middle Island. Many parties visited the "Acheron" under the impression and hope that this purchase formed part of our mission, but of course I could only promise that their wishes should be promptly commu-

nicated to your Excellency. Previous to our departure—after marking on the chart the reserves they were desirous of retaining, the Maories, both in Foveaux Strait and at Otago, expressed their desire to sell all the land from Otago to the western coast. 2000*l.* would probably be accepted as purchase-money, one half of which I would suggest should be distributed at Otago, and the remainder at the Bluff, an arrangement securing their fair proportion to all the parties entitled to it.

Stewart Island has an altitude of 3200 feet. Its coast line is strangely distorted in the charts now in use, the south end excepted, which, having been visited by the great navigator Cook, is laid down with his accustomed accuracy. The eastern and northern sides have several good harbours. Of these, Patterson Inlet deserves particular notice, being nowhere surpassed in New Zealand; it has many convenient heaving down coves, and is generally surrounded by fine timber, such as rimu, rata, black pine, totara, &c., &c. This inlet seems very eligible for a small permanent settlement. On a narrow tongue of land forming its eastern shore are congregated twelve out of the 107 European inhabitants of Foveaux Strait, who have likewise a few cattle. The other white men live scattered over the N. and S. shores. Some have passed 22 years in this solitude, and with few exceptions are married to Maori women, and their daughters are the wives of Europeans also. Their small clearings on Stewart Island exhibit a fertile though shallow soil.

Of the Maori population, amounting to 280 individuals, 105 reside on Ruapuki Island, of the whole of which they seem disposed to keep possession, although portions have been purchased by Europeans.

A few plants, common to the Auckland Isles, were also found in Foveaux Strait, and one bird, a snipe, excited our curiosity as being the first of the species seen in New Zealand. Respecting some beaver said to breed in the great lakes, whence the principal south eastern rivers take their rise, no information could be gathered, even from the oldest native, so that their existence is probably a fable. A large lizard, said to exist there, seemed to inspire feelings of apprehension and awe.

Indications of *coal** were observed on only one spot, high up the

* "*Monday, May 26th.*—As we proceeded about the time of low water along shore, I was gratified to observe very abundant large pieces of drift coal of good quality; still no bed was visible in the face of the cliff. Further on the beach became again rocky, and quantities of coal were lodged between the rocks, and soon appeared in view a *black cliff*. I felt certain it must be a vast formation of coal, although Mr. —, at Waikauwaike, had declared that there was no other coal discovered along the coast but the insignificant ap-

Mataura, but of inferior quality. Lignite exists in the New River, where, I before omitted to observe, about 200 head of cattle are depastured showing prime condition from the excellent feed.

The navigation of Foveaux Strait being now rendered secure, and a great obstacle to the settlement of its shores being thus removed, I shall conclude my letter with the hope that a spot so eligible as "Awarua," or the Bluff, will not long remain unoccupied. Many of the peculiar advantages possessed by this site I have already detailed, one more may be adduced, well calculated to bespeak the preference of my countrymen—namely, that it is fully a fortnight nearer to England than any portion of New Zealand now under colonization.

From letters, since received, we learn that "several plans have been forwarded by Captain Stokes, which, in addition to their illustrating the internal routes of the explorers, fix, after the most careful examination, nearly the whole of the coast-line of the E. and S. of the Middle Island, differing materially from the old charts.

"The chart of part of the eastern coast is the result of very careful exploration. The 'Acheron' has four several times examined it, and Mr. Hamilton explored it in a boat, landing every few miles, and making observations. The interior of the southern portion of this part of the Middle Island nearest Bank's *Promontory* (so called by Captain Stokes) has been explored by that officer in person, and by Mr. Hamilton. The northern portion of the interior has been explored by His Excellency, Lieut.-Governor Eyre, Mr. Hamilton, Captain Mitchell, of the Indian army, and Mr. Dashwood, late of the same service. Captain Mitchell was so much pleased with the country, that he has determined to become a colonist, and is now in the district establishing a sheep-station. He goes to India in a few weeks, whence he will finally return to New Zealand as early as he can make the necessary arrangements for quitting the service. Mr. Dashwood is already a settler at Nelson.

"The other plan exhibits the country about Foveaux Strait, lately explored by Captain Stokes, and through which Mr. Hamilton and Mr. Spencer, one of the officers of the 'Acheron,' walked to Otago. It proves a district of very great value, consisting of level and undulating country, well watered and timbered, and everywhere covered with abundant pasture.

"It contains probably not less than a million acres of agricultural land, besides a large quantity of a mere pastoral character.

"The 'Acheron' is at present in Cook Strait, completing some portion of the survey there; thence I believe she will proceed to New Plymouth, and afterwards to the west coast of the Middle Island, which will be completed

pearance which I had examined at Matakaea. Approaching this cliff, I found it to be a mass of coal for about 100 yards length, in thickness from 12 to 20 feet, as seen in the face of the cliff above the sand, and to what depth it exists beneath the sand I could not ascertain; I should suppose, from appearance of coal, adjacent to the depth of low water. The beach is not accessible on account of the heavy swell and great surf. The coal must, therefore, be worked inland, and the bed will be, no doubt, discovered near the bank of the Mataau River, which, in a direct line inland, is probably not more than 4 or 5 miles distant."—*Extract from Mr. Tuckett's Diary*, p. 41.

during the summer, when the whole of the coast and principal harbours within the Company's territory will have been laid down on the charts. The distinguished character of the officer under whose superintendence this great work is being effected will stamp it with the highest authority, and few operations could have been undertaken of more importance to an insular colony."—ED.

Memorandum of an Expedition into the Interior of the Middle Island of New Zealand, undertaken by Mr. Dashwood and Capt. Mitchell, for the purpose of finding an Inland Route from the Wairau to the Port Cooper Plains.

Wellington, June 11, 1850.

"SIR,—Aware of the very great interest felt by the Government, and the public in general, on the subject of an inland route from the Nelson district to the Port Cooper Plains, I have the honour to lay before you, with as little delay as possible, the result of an expedition into the interior of the Middle Island, undertaken by Mr. Dashwood and myself, from which we have just returned.

"A few hurried notes I despatched from the Wairau informed you that Mr. Dashwood and myself had already made a short excursion up the Waiopai, on which occasion, from the top of a hill, whence the Waiopai derives its principal source, we discovered a valley running in a S.S.W. direction. This valley it was now our object to explore.

"Before proceeding I had perhaps better recapitulate the chief observations I made on that occasion, and give the bearings of the principal landmarks, taken from a mountain to which I have heard a very sanguinary appellation given, but which I propose to call Mount Shepherd, and a high range of hills on Mr. Cautley's back run.

"From Mount Shepherd the Kaikoras bore N.E. extreme, E.N.E.; S.W. extreme, W.S.W.—They appeared about 20 miles distant. I could distinctly trace an extensive valley running along their base, concerning which I could not then gain any information. I have since made every inquiry from those well acquainted with the coast, but without success. Its existence appears unknown. There did not seem to be any opening through the Kaikoras.

"On the 11th of April we ascended the Cautley range. The morning was densely foggy, but about 11 o'clock it partially cleared. A gorge running S.E. (it formed one of the boundaries of Mr. Cautley's run) had a promising appearance of leading to an open country. It was, however, intercepted with much bush. Ben Opi bore N. a little E., Mount Shepherd E.N.E., his brother S.E. by S. The range of hills forming the E. boundary of the Wairau, and W. of the Waiopai, ran in a half circle from N. by the W. to S. The mouth of Wairau N.N.E. I could only see the S.W. extreme of the Kaikoras—it bore E.S.E.

"I now commence our second expedition, premising that we took with us a mare and a mule carrying about 2 cwt. each, and were accompanied by Harris, an old whaler.

"After easy travelling along the banks of the Waiopai for 30 miles in a general S.S.W. direction (the first 15 of which appeared a good sheep country), we reached Starvation Hill, from which we had previously seen the valley on the 27th of April. On the 29th we ascended it. A good hill horse is required to carry a load up this hill; it was as much as our animals could do. On reaching the top we unloaded, and proceeding along the range to the W. to a higher peak, we found the three highest summits of the Kaikoras bore due E. To the W. the tops of a dense mass of hills were alone visible. From Starvation Hill due S. stands a peculiar pyramidal hill, which we named

Mount Impey. It is a capital landmark. On my former visit it was remarkable for having snow upon it some distance from the top, while the top itself was quite bare, from which it would appear to be volcanic, and at times in an active state; but now it was covered entirely with snow. Descending into the valley, the travelling became rough; rocks, spear-grass, and the plant called wild Irishman, everywhere abounding. The valley appears never to have been fired; there is no fern or bush in it, but the wild Irishman supplied us with good firewood. Here we experienced a most extraordinarily severe frost; never in England have I felt it so intensely cold. The banks and the rocks in the river were masses of immense icicles, and our clothes were frozen hard and stiff two minutes after we had taken them off.

"We now kept the river, which is joined by a larger stream from the E. The valley had as yet been very narrow, but for 2 miles it now became broader. I will give its course by compass bearings at the end of my letter. The country then again changed, the river, increased by small mountain streams from E. to W., and hemmed in by precipitous rocks, became deep and rapid and difficult, and in many places dangerous to cross. Impossible as it was, however, to walk along its high rugged sides, or make any way through the solid phalanx of spear-grass and wild Irishman, which in these parts grow to a size and strength undreamt of by those whose shins have not come in contact with this most formidable enemy, we were obliged to wade for miles along the edge of a shelf of rocks, from which the mule slipped twice, spoiling all our biscuit. Had it been summer the narrow bottoms might have been burnt, but at best this gorge will always deserve its name of the 'Devil's Grip.'

"After five miles of this amphibious travelling the valley again opened, and Mr. Dashwood and myself having clambered up a hill, discovered, much to our delight, a beautiful valley running N. and S. A river, which had its source in some small hills at our feet, wound through it. The width of the valley I should suppose to be about four or five miles. On each side ran low undulating hills, backed to the E. by a high mountain range, the very picture of a perfect sheep-grazing country. At the distance we were, to judge of the quality of the grass was impossible; though the height of the valley above the level of the sea perhaps rendered this part too cold for good grass, and unfit for sheep. We had the honour to attach your name, Sir, to this valley; and it is my firm belief, that ere long the great S. road will traverse Richmond Valley. Looking down it from the hill on which we stood no impediment whatever could be discerned. Mr. Dashwood believed it to be the Kaiparathau. I am not sufficiently acquainted with the geography of the N.E. coast to hazard an opinion, but I feel convinced it is the same valley I before mentioned as having distinctly traced from Mount Shepherd running at the base of the Kaikoras. It is separated from Acheron valley (as I propose to call the valley along which we journeyed, after H.M.S. 'Acheron') by easy low hills, over which you might now drive a cart, and thus Starvation Hill, the Devil's Grip, and our enemies, the prickles, would be avoided. If the river does run into the sea at N.E. it may be the Awatere, or the Blind River immediately to the S. of the Awatere. But this is mere supposition. It ought to be immediately explored. Mount Impey bore S.S.E., a little S., the Kaikoras N.N.E.

"*May 3rd.*—Again were we obliged to take to the river, the banks being so densely covered with our well-armed vegetable opponents as to be impassable for man or beast. We attempted to fire, but, alas! in vain; it was too wet. The valley had now gradually increased to the width of two miles, with improving grass which might do for cattle. A large river (the Newcome) ran into Acheron vale from W. The E. bank had been fired.

"*May 4th.*—Harris and myself had to return six miles after the horses,

which had strayed during the night. Mr. Dashwood in the mean time ascended a low range of hills to the W., and discovered a valley which I named after him. He described it as grassy, half a mile wide, and its course S. by W. and N. by E. It ran into Acheron valley E.S.E.

"The river along which we travelled had become a considerable stream, and it behoved us to be careful where we crossed. Cogitating on its bank on the possibility of fording at the point where we then stood, the horse and mule suddenly dashed in, and proved the impracticability by swimming across, and leaving us in the lurch. Some distance further down, we managed with much difficulty to ford it, and regain our steeds. The hills for about seven miles to the W. are low and undulating. A high snowy range then rises and runs parallel with Acheron Vale, from which the rivers and streams appear to derive their source.

"This part of the country would be well worth exploring. Two horses could carry provisions for three months; ample time during long days in fine weather to examine the valleys, and to survey the country E. and W. from the hills, which are all easy of ascent.

"The soil and grasses here were much improved, and good cattle stations might be formed; but I fear the immense quantity of spear-grass, and other prickles, would prove an obstacle for sheep.

"*May 8th.*—The horses recrossed the river during the night, and Mr. Dashwood and Harris returned for them. I climbed a hill, but owing to the fog and clouds could make but little out. A river from N.N.E. ran into Acheron Vale at W. A high snowy range ran N.W. by N. to S.E. by S. The fog precluded my seeing more.

"On the highest peak of the hill I had ascended was a bed of small broken stones, to all appearance of granite, of a very considerable depth. I tried to get at the soil with a stick without success. They gave one the idea of stones put on a recently finished Macadamized road; they were broken to the size of those used in England for private park roads, and were smoothed as if with a shovel. The whole top for some distance down was covered with them.

"Some shrubs—aniseed, wild geranium, and parsley; ducks, both black and blue, wikas, cranes, paradise geese, quails, grasshoppers, and flies, seemed to denote improving country, and to hint that we were nearing the coast—at least so we interpreted it. On an expedition of this kind there ought always to be a dog and gun amongst the party. As it was, our dog caught us more wikas than we could eat; but ducks, paradise geese, and quail, would have been dainties we could have daily dined off had we had a gun.

"The first certain signs of Maories we discovered on the 9th; a quantity of firewood collected and the remains of a whari gave certain evidence of an old Maori encampment. The valley at this part was not more than three or four hundred yards wide, in places much less. The hills on both sides were covered with snow. The river turns at right angles to the E., another large one (the Poynter) running into it from the W. On regaining an eminence, I discovered a valley three-quarters of a mile wide. The hills on either side were covered with grass, and in the distance—for the first time since leaving the Waiohi—was bush of black birch and manuka. The valley ran due E. and W. We had now evident signs of the banks of the river having been recently burnt, probably by natives passing along the coast. The soil still continued improving, and travelling easy; but here I have to record an irreparable loss. When midway across the river I found it deeper, and the stream more rapid than I had anticipated; so, to prevent my note-book getting damaged, I held up my blue shirt, and dropped my compass from the pocket, the only one with the party. I have taken correct bearings of the valley for

40 miles, the remainder is guess work. A stream from the N., another from S.W., joined the river.

"Acheron Valley now became impassable, so Mr. Dashwood and myself set out on a surveying expedition. Having arrived at the top of the highest hill, we were rewarded for our labour by a bird's-eye view of a most magnificent country. To the S. we commanded at least one hundred miles in a direct line. The sea between the coast on the plains and Bank's Peninsula had the appearance of a river, and a succession of extensive plains to the S.W. might easily be mistaken for one vast prairie. To the N.E. and E. Mr. Dashwood (who was on a different knoll) saw the sea and the low hills about Cape Campbell.

"I felt now the loss of my compass. Well known landmarks in every direction, and unable to take bearings.

"*May 11th.*—We had up to this period been following the river running through Acheron Valley, which, from subsequent inquiry, I have every reason to believe was the Waipapa, or Big River of the whalers; but now, leaving it running to the N.E., we returned a short distance and took the stream I before mentioned as joining from the S.W. The valley through which it ran we named the Valley of Hope. Keeping along it we mounted a hill from which the stream derives its source. On the S. side of this hill another river takes its rise, and runs in a south-westerly direction. We descended a spur (clothed with black birch bush, through which there is not any difficulty in leading a horse) on the W. side, and came to the bed of the river, which is one of the sources of the Waiau-au. Keeping this for 11 miles, we entered an extensive plain (Hamilton Plain). The grass (very good) was interspersed with fern; and a great deal of manuka grew in patches. A large swamp, in which we nearly left the mare, occupied the centre; various mountain streams ran through it into the Waiau-au. It would prove valuable for cattle stations. Returning towards what we supposed to be the continuation of the same river described above as the source of the Waiau-au, we came, to our surprise, upon an entirely different river, running in a direction exactly opposite to that of the former, which it joins where we met it. At this spot, both turned suddenly to the eastward, at directly right angles to their previous courses, and flowed down to the sea as one broad river the Waiau-au. Some idea may be formed of its size from the fact of our crossing the southerly stream in seven distinct channels. On nearing the shore the last channel became suddenly deep. Taken by surprise, I was carried off my legs, and immersed; but, scrambling up again, I perceived a trusty stick held out to me. Seizing it, I was dragged on shore by the same hand and the same stick that had once before done me the same good service—those of my friend Dashwood.

"Other plains I have no doubt exist to the S.W.; but for three days we could scarcely see the outline of the hills through the fog, although not three miles distant.

"We now wended our way through a sweet pretty valley. The river, which was in one broad stream, surrounded numerous islands covered with wood. On the hills, the flax, fern, and ti-tree was the general herbage; but the spear-grass and wild Irishman still made their appearance in a diminutive form. In some large bottoms of 50 acres close to the bed of the river, which I suppose from their appearance to have been at some period inundated, and in the gullies, between the hills, the soil was particularly rich, producing flax of an extraordinary height and size.

"Issuing from this valley we burst upon the finest grazing plain I have ever seen in this or any other country. I know it is the fate of travellers to be accused of exaggeration, but I care not, as long as I call attention to the splendid inland plains. I will therefore attempt a description from the hasty observations I was enabled to take.

"The plain, surrounded by low, undulating, grassy hills, backed by higher ranges, is bowl-shaped, and contains not less than 260,000 acres (I believe much more). Two rivers, the Waiau-au and Hurunui, run through it parallel to each other, at eight miles distance. The grass is of the best description, and the soil in many places fit for cultivation. It has a perfect natural drainage, is well sheltered from all winds, has no swamps—but also, I much fear, no wood.

"I may as well at once say, that through this plain over some easy low hills to the south, is the direct route to Port Cooper. But we, ignorant of the country, with rapidly diminishing provisions, without compass, and in thick weather, deemed it more prudent to make Motunau by the coast, where we knew there was a station.

"Keeping the Waiau-au for 5 miles further, we entered a gully, but soon finding it impassable, took to the hills, from which we obtained a view of the sea. Descending into another extensive plain with more swamp, but equally good grazing capabilities as the last, we crossed some more hills and reached the coast. These hills by the sea side are covered with fern, flax, ti-tree, toitoi, and manuka.

"*May 23rd.*—Finding the cliffs perpendicular, and no possibility of gaining the beach, we returned a part of our last day's walk and taking a southerly direction came to a hill from which we espied a fire on the plain below. Lighting another in answer to it, we remained some time on the look-out for sign of man; but none appearing, we made the coast near a salt lagoon to the north of the Hurunui. About 8 o'clock in the evening we heard a cooing, and shortly had the pleasure of welcoming Mr. Caverhill of Motunau, who had been on the look-out for us for some time, and had followed our track for three days. Piloted by him across the Hurunui (a rapid, deep, and dangerous river), we arrived at his house, where we obtained all we required, food, rest, clothes, and money.

"From thence leaving Harris, we started for Port Cooper. Losing ourselves on the plains by keeping too close to the sea, a violent snow storm overtook us, and getting entangled in the swamps, over which no horse could venture, we wandered for two days, on the third almost starved from want of food and cold (we had not had a fire since we started, not having any tinder or matches with us), we shouldered our blankets, and leaving our horses made through the swamp to Kaiapoi.

"In due time we reached the town of Lyttleton, which, with the plains, are too well known to render a description from me necessary, neither is it the purport of this letter to give one; suffice it, therefore, to say, that all I had heard in their favour did not come up, in my opinion, to the reality. I was surprised and delighted at the extent of the land and richness of the soil, the amount of useful work done, and the lasting, solid, yet neat manner in which it has been executed. It does very great credit to all concerned.

"And now, sir, in conclusion, I have only to add that Mr. Dashwood and myself both regret our inability to furnish more satisfactory information of the country adjacent to that through which we travelled, but the loss of our compass in an utterly unexplored and unknown country, the shortness of the days, the continual thick weather, which prevented our seeing a mile before us for days, and the storms of snow, sleet, hail, and rain, rendered that which may henceforth easily be accomplished in ten days, a difficult and laborious journey of six weeks.

"I have purposely omitted all adventures merely personal; my aim being, not to write a letter, but an attempt to give a clear, succinct account, useful to future travellers, which, with the kind and able assistance of Mr. Hamilton of the *Acheron*, who knows the greater part of the country over which I tra-

velled after I lost my compass, I hope in a short time to make more comprehensible by a correct map.

" I have the honour to be, Sir,

" Your obedient servant,

(Signed)

" W. MURRAY MITCHELL,

" Capt. 84th Regt.

" His Honour the Superintendent, Nelson.

" The following is the course of Acheron valley—

| | |
|-----------------------------|------------------|
| S. by E. | 5 miles. |
| W. | 3 " |
| W. S. W. | 3 " |
| S. W. by S. | 7 " |
| S. | 5 " |
| E.S.E. | $\frac{1}{2}$ " |
| S. | 1 " |
| S.S.E. | $1\frac{1}{2}$ " |
| S.S.W. | 2 " |
| S. by W. | $1\frac{1}{2}$ " |
| S. by E. | $\frac{1}{2}$ " |
| S.W. by S. | 2 " |
| S.S.W. | $1\frac{1}{2}$ " |
| S. | $1\frac{1}{2}$ " |
| S. by E. | 1 " |
| E. a little North | 3 " |

" Here we left the river running N.E., and I lost my compass."

NOTE.—On the reading of the paper by Capt. J. L. Stokes, R.N., 'On the Survey of the Southern Part of the Middle Island of New Zealand, with Memoranda of its Exploration,' Mr. Tuckett made several observations, which the President deemed so important that he requested him to draw up an analysis of them; of which the following is a copy:—
 " Having been employed in 1844 by the New Zealand Company to explore the eastern and southern coasts of the Middle Island of New Zealand, in order to select a suitable site for the then projected settlement of New Edinburgh, I had occasion to examine carefully the district described. I can fully confirm the accuracy of the observation in respect to the vast extent of available surface which exists south of Tuturau and the Matura river to the shore of Foveaux Strait, between the Eurete or New River and the Aparima westward, as also to the east of the Eurete. I cannot, however, concur in recommending it as a district eligible for a settlement. Instead of its affording good pasture for grazing or fertile soil for husbandry, in my judgment the surface is rather nude, and the vegetation, chiefly large, detached bunches of a very coarse sharp-edged junk. Where the banks of the Aparima and Eurete are wooded, I found chiefly the totara and the manuka growing luxuriantly, but in deep sand; whilst those portions of the gently undulated uplands which are wooded would afford, almost exclusively, varieties of the birch, which abounds and attains great dimensions even on the poorest land. The earth presents a surface of a whitish hue when dry, without mould or humus, being a deep and gritty clay (as I found by frequently digging), which I am convinced would not bear any adequate crop without being first well manured. Between the east and west branches of the river Eurete the land is low and sandy. Eastward to the coast is a vast bed of fine quartz gravel covered with heather and uxurious mosses; and in some places occurs peat of pretty good quality and

considerable depth. There is good timber at the western extremity of Bluff Harbour, and between it and the river Eurete some extent of bush land, in and around which a herd of cattle finds sufficient pasture, but feeding chiefly on the milk thistle, &c. There is a small community of Europeans at the Bluff and at the Aparima, who have intermarried with the natives, and who, pursuing whaling, sealing, and husbandry, and in a few instances stock-keeping, have attained to very comfortable circumstances. Some were in the practice of growing wheat, but they informed me that the climate was unfavourable, rains being frequent and copious, and the gales of wind boisterous. While my vessel lay at anchor in the Eurete, in the month of May, we had to encounter, in the surveys executed and our several exploratory journeys, very inclement weather. Considering then the climate, the soil, and the natural growth, I am convinced that there is no very eligible site for a future settlement south of the Mataura river and Tuturau; a favourite residence of the natives formerly, when they were more numerous, because it afforded shelter from the southern climate, good fishing and fertile land. From Tuturau north to Otago there is an unbroken tract of fertile and well-watered land, affording abundant pasture and much of it of excellent quality for tillage. It abounds with supplies of coal, wood, timber, brick-earth, stone, conveniently dispersed through the district, and very accessible by the facilities of inland navigation which its rivers and lakes afford. Again:—For fifty miles north of Otago there is a district presenting almost equal capabilities for large productiveness. Further north, along the ninety miles beach, extending about twenty-eight miles above Banks Peninsula, there is a vast plain, for the most part either too arid and stony or too wet and swampy to be eligible for occupation. There is but a very limited quantity of fertile land good enough for tillage within a distance of twenty miles of either of the harbours of Banks Peninsula. The surfaces of plains in New Zealand usually present a succession of terraces in lines parallel with the courses of the rivers, rising in steps of from 6 ft. to 14 ft. in elevation. Much of the surface is desolated by a closely-imbedded boulder and shingle: and usually where these occur of the greatest breadth, and where is a dead level, the surface is the most stony. On the hill lands of Banks Peninsula there is good pasture; but it is not so on the plain. My reasons for rejecting it as ineligible for the site of a settlement, as well as my Report of the entire journey of exploration which I made in 1844, are alluded to in the Seventeenth Report of the Directors of the New Zealand Company, and the substance of the same will be presented to the public under the head of ‘Topography of the Middle Island of New Zealand’ in the work on British Colonies written by Mr. R. M. Martin.”—ED.

V.—*Remarks on the use of the Aneroid Barometer.*—By Colonel
PHILIP YORKE, F.R.S., F.R.G.S.

[Read Feb. 10, 1851.]

THE portability and facility of observing the aneroid barometer has of late occasionally induced travellers to substitute it for the mercurial barometer in meteorological observations, and for obtaining differences of level. But before the value of such observations can be estimated, it seems necessary that comparative observations of the aneroid with the ordinary barometer should be made under different circumstances.